

CLAIMS

What is claimed is:

1. A method for determining an auction format for a market, said
5 method comprising the steps of:
selecting characteristics of said market;
selecting a relevant bidding model;
estimating a structure of said market;
predicting a bidding behavior;
10 predicting a first outcome of said market; and
evaluating said first outcome of said market.
2. The method as recited in Claim 1, wherein said selecting
characteristics of said market step comprises the steps of:
15 receiving a first user input, wherein said first user input
comprises information identifying an item to be auctioned;
accessing a database;
retrieving from said database historical bids data;
retrieving from said database auction characteristics data,
20 wherein said auction characteristics comprise information relating to
historical auctions of similar items;
outputting said bids data; and
outputting said auction characteristics data.

3. The method as recited in Claim 1, wherein said selecting a relevant bidding model step comprises the steps of:

receiving said auction characteristics data;

5 accessing a database;

retrieving from said database a relevant bidding model,

wherein said bidding model is selected based on a corresponding relevance of said auction characteristics data; and

outputting said relevant bidding model.

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4. The method as recited in Claim 1, wherein said estimating a structure of said market step comprises the steps of:

receiving said relevant bidding model;

receiving said bids data;

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expressing unobservable variables in terms of observable

bids, wherein said unobservable variables are expressed in terms of observable bids by inverting said bid model;

transforming said bids data to a sample of inverted bids,

wherein said bids data are transformed by inverting said bid model;

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estimating an estimated latent structure of said market,

wherein said sample of inverted bids receives application of

statistical density estimation techniques to obtain said estimated

structure; and

outputting said estimated structure.

5. The method as recited in Claim 1, wherein said bidding model has embedded an unknown structure, and wherein said predicting a

5 bidding behavior step comprises the steps of:

receiving said estimated structure;

receiving said relevant bidding model;

substituting said estimated structure for said unknown

structure; and

10 outputting a prediction of bidding behavior.

6. The method as recited in Claim 1, wherein said predicting a first outcome of said market step comprises the steps of:

receiving a second user input, wherein said second user

15 input comprises:

an evaluation criterion;

a candidate auction format; and

a constraint;

receiving said estimated structure;

20 receiving said bidding behavior prediction for said candidate auction format, wherein said bidding behavior prediction further comprises a prediction under said constraint;

obtaining a value of said evaluation criterion, wherein said value is based on said estimated structure, said bidding behavior prediction, said candidate auction format, and said constraint, said value comprising said first predicted outcome; and

5 outputting said value.

7. The method as recited in Claim 1, wherein said evaluating said first outcome of said market step comprises the steps of:

10 receiving a third user input, wherein said third user input comprises a plurality of candidate auction formats;

 receiving a predicted outcome for each said candidate auction format;

15 calculating descriptive statistics for each said candidate auction format, wherein said descriptive statistics comprise a mean and a variance;

 ranking each said candidate auction format with respect to said calculated mean and generating corresponding rankings for said plurality; and

20 outputting said descriptive statistics and said rankings.

8. The method as recited in Claim 7, wherein said evaluating said first outcome of said market step further comprises the steps of:

selecting a best auction format, wherein said best auction format comprises the candidate auction format within said plurality having the highest said ranking; and
outputting said best auction format.

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9. A computer system comprising:

a bus;

a memory interconnected with said bus; and

a processor interconnected with said bus, wherein said processor

10 executes a method for determining an auction format for a market, said method comprising the steps of:

selecting characteristics of said market;

selecting a relevant bidding model;

estimating a structure of said market;

15 predicting a bidding behavior;

predicting a first outcome of said market; and

evaluating said first outcome of said market.

10. The system as recited in Claim 9, wherein said selecting
20 characteristics of said market step of said method comprises the steps of:

receiving a first user input, wherein said first user input

comprises information identifying an item to be auctioned;

accessing a database;

retrieving from said database historical bids data;
retrieving from said database auction characteristics data,
wherein said auction characteristics comprise information relating to
historical auctions of similar items;

5 outputting said bids data; and
 outputting said auction characteristics data.

11. The system as recited in Claim 9, wherein said selecting a
relevant bidding model step of said method comprises the steps of:

10 receiving said auction characteristics data;
 accessing a database;
 retrieving from said database a relevant bidding model,
wherein said bidding model is selected based on a corresponding
relevance of said auction characteristics data; and
15 outputting said relevant bidding model.

12. The system as recited in Claim 9, wherein said estimating a
structure of said market step of said method comprises the steps of:

 receiving said relevant bidding model;
20 receiving said bids data;
 expressing unobservable variables in terms of observable
bids, wherein said unobservable variables are expressed in terms of
observable bids by inverting said bid model;

transforming said bids data to a sample of inverted bids,
wherein said bids data are transformed by inverting said bid model;
estimating an estimated latent structure of said market,
wherein said sample of inverted bids receives application of
5 statistical density estimation techniques to obtain said estimated
structure; and
outputting said estimated structure.

13. The system as recited in Claim 9, wherein said bidding model
10 has embedded an unknown structure, and wherein said predicting a
bidding behavior step of said method comprises the steps of:
receiving said estimated structure;
receiving said relevant bidding model;
substituting said estimated structure for said unknown
15 structure; and
outputting a prediction of bidding behavior.

14. The system as recited in Claim 9, wherein said predicting a
first outcome of said market step of said method comprises the steps of:
20 receiving a second user input, wherein said second user
input comprises:

an evaluation criterion;
a candidate auction format; and

a constraint;

receiving said estimated structure;

receiving said bidding behavior prediction for said candidate
auction format, wherein said bidding behavior prediction further
comprises a prediction under said constraint;

obtaining a value of said evaluation criterion, wherein said
value is based on said estimated structure, said bidding behavior
prediction, said candidate auction format, and said constraint, said
value comprising said first predicted outcome; and

outputting said value.

15. The system as recited in Claim 9, wherein said evaluating
said first outcome of said market step of said method comprises the steps
of:

receiving a third user input, wherein said third user input
comprises a plurality of candidate auction formats;

receiving a predicted outcome for each said candidate auction
format;

calculating descriptive statistics for each said candidate
auction format, wherein said descriptive statistics comprise a mean
and a variance;

ranking each said candidate auction format with respect to
said calculated mean and generating corresponding rankings for
said plurality; and

outputting said descriptive statistics and said rankings.

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16. The system as recited in Claim 15, wherein said evaluating
said first outcome of said market step of said method further comprises the
steps of:

10 selecting a best auction format, wherein said best auction
format comprises the candidate auction format within said plurality
having the highest said ranking; and
outputting said best auction format.

15 17. A computer readable medium for causing a computer system
to execute the steps in a method for determining a auction format for a
market, said method comprising the steps of:

20 selecting characteristics of said market;
selecting a relevant bidding model;
estimating a structure of said market;
predicting a bidding behavior;
predicting a first outcome of said market; and
evaluating said first outcome of said market.

18. The computer readable medium as recited in Claim 17,
wherein said selecting characteristics of said market step of said method
comprises the steps of:

receiving a first user input, wherein said first user input
5 comprises information identifying an item to be auctioned;
accessing a database;
retrieving from said database historical bids data;
retrieving from said database auction characteristics data,
wherein said auction characteristics comprise information relating to
10 historical auctions of similar items;
outputting said bids data; and
outputting said auction characteristics data.

19. The computer readable medium as recited in Claim 17,
15 wherein said selecting a relevant bidding model step of said method
comprises the steps of:
receiving said auction characteristics data;
accessing a database;
retrieving from said database a relevant bidding model,
20 wherein said bidding model is selected based on a corresponding
relevance of said auction characteristics data; and
outputting said relevant bidding model.

20. The computer readable medium as recited in Claim 17,
wherein said estimating a structure of said market step of said method
comprises the steps of:

- receiving said relevant bidding model;
- 5 receiving said bids data;
- expressing unobservable variables in terms of observable
bids, wherein said unobservable variables are expressed in terms of
observable bids by inverting said bid model;
- transforming said bids data to a sample of inverted bids,
- 10 wherein said bids data are transformed by inverting said bid model;
- estimating an estimated latent structure of said market,
wherein said sample of inverted bids receives application of
statistical density estimation techniques to obtain said estimated
structure; and
- 15 outputting said estimated structure.

21. The computer readable medium as recited in Claim 17,
wherein said bidding model has embedded an unknown structure, and
wherein said predicting a bidding behavior step of said method comprises
20 the steps of:

- receiving said estimated structure;
- receiving said relevant bidding model;

substituting said estimated structure for said unknown structure; and
outputting a prediction of bidding behavior.

5 22. The computer readable medium as recited in Claim 17,
wherein said predicting a first outcome of said market step of said method
comprises the steps of:

receiving a second user input, wherein said second user
input comprises:

10 an evaluation criterion;
a candidate auction format; and
a constraint;

receiving said estimated structure;

15 receiving said bidding behavior prediction for said candidate
auction format, wherein said bidding behavior prediction further
comprises a prediction under said constraint;

20 obtaining a value of said evaluation criterion, wherein said
value is based on said estimated structure, said bidding behavior
prediction, said candidate auction format, and said constraint, said
value comprising said first predicted outcome; and
outputting said value.

23. The computer readable medium as recited in Claim 17, wherein said evaluating said first outcome of said market step of said method comprises the steps of:

receiving a third user input, wherein said third user input

5 comprises a plurality of candidate auction formats;

receiving a predicted outcome for each said candidate auction format;

calculating descriptive statistics for each said candidate auction format, wherein said descriptive statistics comprise a mean and a variance;

10 ranking each said candidate auction format with respect to said calculated mean and generating corresponding rankings for said plurality; and

outputting said descriptive statistics and said rankings.

24. The computer readable medium as recited in Claim 23, wherein said evaluating said first outcome of said market step of said method further comprises the steps of:

selecting a best auction format, wherein said best auction

20 format comprises the candidate auction format within said plurality having the highest said ranking; and

outputting said best auction format.